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The free radical chain mechanism of the initial stages of crude oil oxidation in term of SARA fractions

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Abstract

© 2018 Institute of Physics Publishing. All rights reserved. The formation and decomposition of hydro-peroxides are the key stages of combustion. These stages strongly depend on the several factors accelerating or slowing this process. The aim of this work is to estimate experimentally which oil components act as inhibitors of initial stages of oxidation and which accelerate the process. The next aim is to explore the process of adsorption of oil components on the grain of rock, which turned to be also a key process in the low temperature oxidation. The work includes experimental part where differential scanning calorimeter (PDSC) experiments with pure saturates, mixtures of saturates and aromatic oil fractions and mixtures of saturates, aromatic fractions and rock samples are considered. Effects of inhibition and acceleration of the initial oxidation stages are explored.

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